Journal of Saidu Medical College 2016; 6(1)

DEMOGRAPHIC AND SEASONAL VARIATION OF BELL'S PALSY IN MARDAN REGION, PAKISTAN- A FIFTEEN YEARS

WAJID AKBAR[1], JAMMIL ANWAR[2], ADNAN BADAR[3], MAHID IQBAL[4], ASADULLAH[5], NAIK ZADA[5]

1. Department of Anatomy, Bacha Khan Medical College Mardan.
2. Department of Anatomy, Bacha Khan Medical College Mardan.
3. Department of Anatomy, Bacha Khan Medical College Mardan.
4. Department of ENT, Saidu Medical College, Swat.
5. Department of Anatomy, Saidu Medical College Swat.

ABSTRACT

BACKGROUND: Bell's palsy is idiopathic facial nerve paralysis of sudden onset characterized by unilateral facial weakness. The influence of age is more on its occurrence. Men and women affects almost equally, often unilateral with no side predilection, but may be bilateral in small number of cases. Bell's palsy has multi factorial etiology, climate factors such as temperature, humidity and barometric pressure have been implicated in triggering off the pathogenic mechanism of Bell's palsy.
OBJECTIVES: To evaluate the influence of different seasons on the occurrence of Bell's palsy.
MATERIAL & METHODS: This prospective study was conducted in departments of medicine, ENT of Mardan Medical Complex hospital Mardan region-KPK,Pakistan. Two hundred and one cases (males 91, females 110) of Bell's palsy between 1 to 80 years of age were included. This study was performed from January 2002 to December 2015. Patient distribution was recorded by seasonal pattern, age groups, gender wise and affected side. The collected data were analyzed with standard statistical methods using SPSS version 20.0.
RESULTS: Out of total 201 patients, there were 45.3% males and 54.7% of females. The mean age of total population was 36.21 SD (19.97); consisted of 38.03 SD (18.76) of male and 34.71 SD (20.88) of females. The incidence of Bell's palsy was high in age group of 31-40 years; 42(20.9%) and in 11-20 years; 41(20.4%). Bell's palsy was more in females 110(54.7%) as compared to male; 91(45.3%). The cases with left side Bell's palsy were more 101 (50.2%) than the right side 100(49.8%). The high incidence of Bell's palsy was recorded during the month of December; (19.9%) and (13.9%) in January of winter season.
CONCLUSION: Winter season has effect on the incidence of Bell's palsy in district Mardan. However a larger sample size recruited from multicenter would be helpful in further clarifying the fact that whether all these differences are purely due to environmental, climatic and seasonal factors or due to racial susceptibility.
KEY WORDS: Bell's palsy, seasonal variation, Mardan region.

INTRODUCTION

Bell's palsy is idiopathic facial nerve paralysis of sudden onset, named after Scottish anatomist Charles Bell. The most alarming symptom of Bells palsy is unilateral facial weakness. Denervation of the orbicularis oculi muscle results in inability of patient to close eye lids effectively, while denervation of the risorius muscle results limited retraction of angle of mouth. Less common symptoms include hyperacusis, decreased production of tears, altered taste and numbness or pain around the ear of the affected site[1].

Its annual incidence is approximately 20 per 100,000[2]. Men and women are equally affected

and there is no predilection for either side of face[3]. The influence of age is more on the onset of Bell's palsy. The commonest age is 15-45 with the risk being highest in patients older than 70 years of age[4]. Bell's palsy affects men and women almost equally, often unilateral with no side predilection, but may be bilateral in small number of cases.

Bell's palsy has multi factorial etiology. The possible causes are viral infection (HSV), ear diseases, vascular dysfunction, Lyme disease, brain tumor and disorder of autonomic regulation. Diabetic patients and pregnant women's have more predisposing to this disease. Metrological or climate factors such as temperature, humidity and barometric pressure have been implicated in triggering off the pathogenic mechanism of Bell's palsy. According to one study both climate and season are independent predictors of risk of Bell's palsy[5].

In the present study, we evaluated the influence of meteorological factors, such as temperature on the incidence of Bell's palsy.

MATERIAL AND METHODS

The study was initiated after approval of Ethical Review Committee. This was prospective cross-sectional study was conducted in the departments of medicine and ENT of Mardan Medical Complex hospital Mardan from 2002 to 2015. Total of two hundred and one patients both male and female from 1-80 years were included in the study. Subjects with a history of diabetes mellitus, renal, liver, endocrinologic and neoplastic diseases as well as head injury, post-surgical pareses and ear infections have been excluded from the study. The participants were explained the purpose of the study and an informed consent was obtained. The diagnosed were made clinically by assessing signs & symptoms of disease. The day of onset of the disease was recorded accordingly to patient history and each case was characterized by season in which Bell's palsy was first diagnosed. The patients were examined by an ENT specialist, when anamnesis indicated Bell's palsy then only a few laboratory blood tests for glucose and measurement of blood pressure were carried out. The statistical software SPSS (version 20.0) was used for descriptive statistics.

RESULTS

The study population of 201 cases included 91(45.3%) of male and 110(54.7%) of females, with a mean age of 38.03 SD (18.76) in male and 34.71 SD (20.88) in females. The mean age of total population was 36.21 SD (19.97) years. (Table 1)

Table 01: Age distribution of total population

	Gender	N	Frequency	Mean	Std. Deviation
Age (in years)	Male	91	45.3	38.03	18.76
	Female	110	54.7	34.71	20.88
Total		201	100	36.21	19.97

N= number of study subjects, Std.Deviation= Standard deviation

The incidence of disease was high in age group 31-40 years 42(20.9%) and in 11-20 years of age group was 41(20.4%) as shown clearly in table no.2.

Table 02: Age group wise distribution of study population n=201

Age (years)	Frequency	Percent	Valid Percent	Cummulative Percent
1-10	19	9.5	9.5	9.5
11-20	41	20.04	20.4	29.9
21-30	31	15.4	15.4	45.3
31-40	42	20.9	20.9	66.2
41-50	28	13.9	13.9	80.1
51-60	11	5.5	5.5	85.6
61-70	18	9.0	9.0	94.5
71-80	11	5.5	5.5	100
Total	201	100	100	

According to gender wise distribution as shown in the table no.3, the incidence of Bell's palsy was more in females 110(54.7%) as compare to male 91 (45.3%).

Table 03: Incidence of Bell's palsy according to gender n=201

Gender	Frequency	Percent	Valid percent	Cumulative percent
Male	91	45.3	45.3	45.3
Female	110	54.7	54.7	100
Total	201	100	100	

The incidence of left side Bell's palsy was more 101(50.2%) than the right side 100 (49.8%) as shown in table no.4

Table 04: Incidence of Bell's palsy according to affect side n=201

Affected Side	Frequency	Percent	Valid percent	Cumulative percent
Right	100	49.8	49.8	49.8
Left	101	50.2	50.2	100
Total	201	100	100	

According to season the incidence of Bell's palsy was high in the months of December 40(19.9%), in January 28(13.9%) and in February 21(10.4%) accordingly as shown in table no.5

Table 05: Season wise distribution of Bell's palsy. n=201

Season	Frequency	Percent	Valid percent	Cumulative percent
January	28	13.9	13.9	59.2
February	21	10.4	10.4	45.3
March	16	8.0	8.0	75.1
April	20	10.0	10.0	10.0
May	7	3.5	3.5	78.6
June	9	4.5	4.5	67.2
July	7	3.5	3.5	62.7
August	10	5.0	5.0	14.9
September	18	9.0	9.0	34.8
October	15	7.5	7.5	91.0
November	10	5.0	5.0	83.6
December	40	19.9	19.9	100.0
Total	201	100.0	100.0	

DISCUSSION

Bell's palsy is the sudden onset of unilateral dysfunction that results in paralysis of facial muscles. Its incidence varies in different parts of the world. The greatest occurrence has been observed in Japanese, Israelis and in the Mexican population, while smallest in the Swedish people[6,7]. The present study revealed the incidence of peripheral facial palsy to be higher in women than in men. A study[8] stated that the incidence of idiopathic facial palsy is higher in women than in men in a proportion of 1.75:1, as has also been reported by Campbell and Brundage[5].

The commonest occurrence of Bell's palsy is in the age of 40 but disease can occur at any age. In our study the incidence of Bell's palsy was high in middle age group. In a study by Cristane A.K et el[9], detected higher incidence of Bell's palsy between ages 11 and 31 years and the smallest incidence in the extreme age ranges; between 0 and 10 years and over the age of 61 years. Viral P. et al[10], reported the maximum number (50%) of Bell's palsy patients were between 21 to 40 years with an average of 32.82 years.

In present study cases with left side Bell's palsy slightly more than right side. Bell's palsy accounts for 60–75% of all cases of unilateral facial paralysis and affects both left and right sides of face equally[11].

Incidence of facial palsy varies largely in different parts of the world, which could reflect changes in the onset of disease along the years and the diverse geographical areas. Campbell and Brundage[5] suggest that changes in temperature, ultraviolet radiation, exposure to cold, dry, or humid air present in the winter and summer months can exert a traumatic effect on the membranes of the nasopharyngeal mucosa, which could induce reactivation of infections due to herpes. The climate of Mardan region has four distinct seasons; winter from December to February, spring from March to April, summer from May-September and autumn from October to November. The hottest months of year are June, July, August and coldest months December, January and February. In our study we detected higher incidence of Bell's palsy in winter season, particularly December followed by January and decline during summer. It was as early as the fifth century B.C. when Hippocrates suggested that weather changes might affect physical health. Findings of associations between the risk of developing Bell's palsy and seasonal,

geographic, racial/ethnic and environmental factors have been inconsistent[12]. In a search for elusive cause of Bell's palsy, several investigators have endeavored to analyze influence of weather conditions on the incidence of disease. A study by Esabrak[13], in Mousel found high incidence of Bell's palsy in the winter season, while declining the incidence in summer. Viral P[10] et al, conducted a study regarding the effect of cold and incidence of Bell's palsy and found out of 60 total patients 32 patients had history of exposure to cold just before attack of palsy and this point goes in favor of vasospasm.

CONCLUSIONS

In the present study, we emphasized on the possible role of weather as the triggering factor of Bell 's palsy. We found that winter season has effect on the incidence of Bell's Palsy in district Mardan. Low humidity, cold temperatures, ultraviolet radiation, coinfections of the upper respiratory tract and dry indoor air should also be assessed as possible triggers of this disease. Further studies involving multicenter reports could be more successful in investigating the influence of environmental factors on facial nerve function.

COMPETING INTERESTS

None declared

ACKNOWLEDGEMENTS

Authors are grateful to the Departments of Medicine and ENT of Mardan Medical Complex hospital Mardan for contributing to the collection of data for the present study.

REFERENCES

1. Tiemstra JD, Khatkhate N. Bell's palsy: diagnosis and management. Am family physicians 2007; 76: 997-1002.
2. Gilden DH. Bell's palsy. N Engl J Med 2004; 351: 1323-31.
3. Rowlands S, Hooper R, Hughes R, Burney P. The epidemiology and treatment of Bell's palsy in the UK. Eur J Neurol 2009; 9: 63-7.
4. Peitersen E. Bell's palsy: the spontaneous course of 2,500 peripheral facial nerve palsies of different etiologies. Acta oto-laryngologica. Supplementum 2002; (549): 4-30.
5. Campbell KE, Brundage JF. Effects of climate, latitude, and season on the incidence of Bell's palsy in the US Armed Forces. Am J Epid 2002;1; 156(1):32-39.
6. Sponges K, Sameli S, Stouraitis G, Kolias A,Koulouri O. Seasonal variation of Bell's palsy in Athens, Greece - a hospital-based retrospective evaluation over fifteen years. Eur Neurol 2006; 55(2): 84-88.
7. Danielides V, Patrikakos G, Nousia CS, Bartzokas A, Milionis HJ. Weather conditions and Bell's palsy: five-year study and review of the literature. BMC Neurol. 2001; 1: 7-14.
8. Sánchez-Chapul L. Bell's palsy. Rev Invest Clin 2011; 63 (4): 361-369.
9. Cristane AK; Oswaldo LM; Fernando DL. The valve of prognostic clinical data in Bell's palsy. Rev Bras otorrinolaringol 2005;71:.4:454-8.
10. Viral p, Mitesh M, Priti Modi. Prospective observational study of Bell's palsy. NJIRM 2013;;4:2:162-168.
11. Morris AM, Deeks SL, Hill MD. Annualized incidence and spectrum of illness from an outbreak investigation of Bell's palsy. Neuroepidemiol 2002;21:255-61.
12. De Diego JI, Prim MP, Madero R. Seasonal patterns of idiopathic facial paralysis: a 16-year study. Otolaryngol Head Neck Surg 1999; 120:269–71.
13. Estabrak M.A. Bell's palsy in Mosul. Annals of the college of medicine 2009;35:1:13-17.

CORRESPONDENCE ADDRESS

Name: Dr. Wajid Akbar
Address: Centre koroona, street no.11, Mardan, Pakistan.
E-mail: drwajidakbar@yahoo.com
Cell no: 03009176437